

# **Control and Prevention of Malaria (CAP-Malaria) Thailand**

## **Semi-Annual Progress Report (October 1, 2014 to September 30, 2015)**

**Last update October 26, 2015**

## Acronyms

ACPR	Adequate Clinical and Parasitological Response
ACT	Artemisinin Combination Therapy
ARM	Artemisinin Resistant Malaria
AS	Artesunate
EDAT	Early Diagnosis and Appropriate Treatment
BCC	Behavioral Change Communication
BVBD	Bureau of Vector Borne Diseases
CAP-M or CAP-Malaria	Control and Prevention of Malaria Project
CI	Case Investigation
CQ	Chloroquine
DHA	Dihydroartemisinin
DHO	District Health Office
DOT	Directly Observe Treatment
FU	Follow-up
FY	Fiscal Year
G2G	Government-to-Government
GCPs/RE	Good Clinical Practices / Research Ethics
GF	Global Funds for AIDS, TB, and Malaria
GF-RAI	Global Funds – Regional Artemisinin Initiative
GF-SSF	Global Funds – Single Stream Fund (Round 10)
HE	Health Education
HF	Health Facility
HH	Household
HPH	Health Promotion Hospital
IEC	Information Education Content
IPC	Interpersonal Communication
ITN	Insecticide Treated Net
LLIN	Long-lasting Insecticide Treated Net
LQAS	Lot Quality Assurance Sampling
M1	Migrant who resides or work in Thailand for 6 months or more
M2	Migrant who resides or work in Thailand for less than 6 months
M&E	Monitoring and Evaluation
MC	Malaria Clinic
MMP	Mobile Migrant Population
MOPH	Ministry of Public Health
MP	Malaria Post
MPR	Malaria Positive Rate
MPW	Malaria Post Worker
MQ	Mefloquine
MV	Migrant volunteers
NGO	Non-Profit Organization
ODPC	Office of Diseases Prevention and Control
<i>Pf</i>	<i>Plasmodium falciparum</i>
PHO	Provincial Health Office
PMI	President's Malaria Initiatives
PPQ	Piperaquine
<i>Pv</i>	<i>Plasmodium vivax</i>
PYD	Pyronaridine

Q	Implementing Quarter during a Fiscal Year
QA	Quality Assurance
QC	Quality Control
RDMA	Regional Development Mission Asia
RDT	Rapid Diagnostic Test
SI	Strategic Information
SOPs	Standard Operating Procedures
SPAC	Strengthening Prevention and Control of Malaria
SPR	Slide Positive Rate
TA	Technical Assistance
TES	Therapeutic Efficacy Study
TICA	Thailand International Cooperation Agency
TWC	Twin-Cities
URC	University Research Co., LLC.
USAID	United States Agency for International Development
US-CDC	United States Center for Diseases Control
VBDC	Vector Borne Diseases Center
VBDU	Vector Borne Diseases Unit
WHO/SEARO	World Health Organization / South East Asia Regional Office
Y	Implementing Year

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## 1 EXECUTIVE SUMMARY

In Thailand, the PMI|USAID Control and Prevention of Malaria (CAP-Malaria) is implemented by University Research Co., LLC (URC). In Year 4, CAP-M saw further shift the scope and coverage, implementing activities in 3 provinces including Ranong (Kraburi district in Year 1 and La-un district in Year 2) and in Chanthaburi (Pongnamron and Soidao districts in Year 1), and the addition of Sakaeo (Klonghat district in Year 4). The addition new district is to have parallel malaria control and prevention activities in Klonghat district with the pre-elimination efforts in Sampov Loun Operational District, Cambodia.

To maintain coverage of, CAP-Malaria conducted monitoring of LLIN coverage and use in the 8 villages in Ranong province and 8 villages in Chanthaburi that previously received long-lasting insecticide-treated net (LLINs) 3-6 months earlier to determine (LLIN), particularly among migrant workers. CAP-Malaria has adopted the Lot-Quality Assurance Sampling (LQAS) to randomly select household to determine coverage and use of LLINs in between annual distribution campaign.

CAP-Malaria established a network of bi-lingual village volunteers and migrant volunteers to target health education to migrant workers working in Thailand. The Twin-Cities model of collaborations in malaria control and prevention has demonstrated early success in setting up priorities and joint activities related to Malaria. Whenever possible, CAP-Malaria leverages local resources or build on local initiatives to promote cross-border collaborations to include activities relevant to malaria control and interventions at the provincial level and extending to district level.

CAP-Malaria provided technical support to the government-to-government (G2G) PMI|USAID supported the Strengthening of Prevention and Control of Malaria (SPAC-Malaria) project awarded to the Bureau of Vector Borne Diseases (BVBD). In Year 4, the scope of technical assistant was limited to Therapeutic Efficacy Surveillance (TES) Study. Through the technical support, additional tools were developed to document adverse effects, monitoring and supervision plan was developed and joint monitoring visit conducted. Results are shared with regional platform or Artemisinin Resistant Malaria (ARM) regional database hosted by the World Health Organization / South East Asia Regional Office (WHO/SEARO).

## 2 PROGRAM PERFORMANCE/ACHIEVEMENTS AND KEY CHALLENGES ENCOUNTERED DURING REPORTING PERIOD BY THEMATIC AREA

**Mobile and migrant population (MMP):** Non-Thai migrants are hard to reach because of their employment insecurity and illegal status. Their mobility and limited knowledge of local resources mean they may be unable to access health services and often excluded from net surveys and distribution. Migrant often travel with little personal belongings including bed nets. CAP-Malaria engages with private employers to serve these migrant communities.

CAP-Malaria trained migrant volunteers (MVs) to provide outreach to migrant communities. These MVs work with Malaria Post Workers (MPWs) and health staffs during outreach activities. The MVs also assist the Vector Borne Disease Unit (VBDU) staff in translation

during case investigation of migrant patients to ensure that information are gathered during case interview to determine transmission foci and target appropriate responses to disrupt malaria transmission.

**Malaria diagnosis and treatment in ARM hotspot:** Scale-up of early diagnosis and treatment (EDAT) services is a one of the key strategic approach for malaria control in ARM hotspots. The scale-up of EDAT services at the community has largely been through the support of external resources including the Global Fund for AIDS, TB, and Malaria (GF) and PMI| USAID. To maintain the gains from these efforts, malaria control program will have to compete with other public health problems including chronic infections, emerging zoonotic disease, and non-communication diseases. CAP-Malaria has been addressing this issue since the start of the project through advocacy and engage of key stakeholders to promote local ownership. In La-un, one of CAP-Malaria trained Malaria Post Workers (MPW) became an employee at a Health Promotion Hospital (HPH) to provide malaria EDAT services to the community through local Tambon (sub-district) Administrative Office budget. Another CAP-Malaria migrant volunteers was hired by District Health Office to serve as translator for Burmese patients at the hospital.

An approach to integrate malaria with primary health services was initially challenging to set up due to resistance from health staff for reasons such as increase workload, competing disease priorities, and lack of malaria commodities allocated to HPHs. Through continuous advocacy with malaria information, EDAT services were expanded into HPHs in La-un district (Ranong) and selected HPHs in Chanthaburi during Year 3. Malaria commodities were leveraged from GF-SSF (GF Single Stream Funding). In Year 4, the GF Regional Artemisinin Initiative (GF-RAI) added this activity into its workplan in January 2015 following successful demonstration in La-un district.

**Technical assistance:** In Year 4, technical assistance (TA) to BVBD is focused on Therapeutic Efficacy Study (TES). The challenges is that BVBD is understaff. CAP-Malaria conducted joint monitoring and supervision visit with several BVBD staffs, including junior level staff, working TES in order to develop human resources.

**Private sectors (PSs):** Migrants make up at least one third of the malaria cases. Though migrant workers are mobile while searching for job opportunities, they often minimized their day-to-day mobility once they find employment as a result of social, legal, and economical barriers. They often rely on their employers for transportation to health facilities when sick. CAP-M engaged with businesses to promote increase access to malaria services for their workers during community outreach and net monitoring activities.

**Cross-border collaboration:** The malaria program is quite centralized, CAP-Malaria has been working closely with counterparts to promote flexibility and direct coordination between Twin-Cities. Despite challenges, continuous engagement with counterparts have reflected in development and implementation of coordinated workplan between Kawthoung-Ranong and Pailin-Chanthaburi. The Twin-Cities activities have expanded to include Sampov Loun-Sakao.

**Budget for CAP-M Thailand activities:** In Year 4, CAP-Malaria continues to experience

reduced funds. CAP-Malaria managed through good relations with local government staff to conduct activities and leveraged resources from partners. For example, Malaria Posts (MPs) under CAP-Malaria were operating at 50% cost compared to GF-supported MPs, while malaria commodities (e.g. RDTs and ACT) to support expansion of EDAT services at HPHs were leveraged from GF-RAI. Twin-Cities meeting between Ranong-Kawthoung, now leveraged resources from local health offices and Thailand International Development Agency (TICA), Ministry of Foreign Affairs. However, funding from TICA based on annual proposal from PHOs and depends on TICA's strategic interests. Though Thailand has announced commitment to elimination malaria by 2025, financial commitment has not yet followed.

### **3 PROGRAM PERFORMANCE DURING REPORTING PERIOD**

#### **3.1 Program overview**

CAP-Malaria has 4 program objectives:

1. To increase access and uptake of malaria prevention through scale-up of village-level community engagement
2. To increase availability and accessibility of malaria services (diagnosis and treatment and compliance to treatment), and to increase uptake of these services among intended users, through engagement with local public health offices and non-health sectors
3. To facilitate use of malaria information in responses to local situation and context
4. To support Twin-Cities model for cross-border collaborations in malaria control and prevention in target border provinces

The 5 Intermediate Results (IRs) to achieve the 4 program objectives fall under the following key thematic areas

- **Malaria prevention**
  - IR1: Use of preventive interventions among community-at-risk increased
- **Malaria case management (treatment and diagnosis)**
  - IR2: Use of quality malaria diagnostics and appropriate treatment increased among malaria patients in CAP-M areas
- **Facilitate use of malaria information**
  - IR3: Use of Strategic Information for decision making increased at national, regional and local level
  - IR4: Malaria control services for mobile populations strengthened through inter agency and regional collaboration
  - IR5: BVBD's SPAC 2 TES component conducted according to timeline (Technical Assistance)
- **Support Twin-Cities model for cross-border collaborations in malaria control**

### and prevention in target border provinces

- IR3: Use of Strategic Information for decision making increased at national, regional and local level
- IR4: Malaria control services for mobile populations strengthened through inter agency and regional collaboration

## 3.2 Coverage Area

CAP-Malaria covers 5 districts in 3 provinces. Figure 1 represent locations of CAP-Malaria activities. Stratification of population and their malaria risks for the target districts are summarized in Table 1. Summary of malaria case report for the target districts is shown in Table 2.

**Figure 1. Thailand map showing the four provinces and districts (marked with yellow star symbols) where CAP-M is implementing activities in Y4**



**Table 1: Population and population at risk (Thai) in the proposed target districts**

Provinces (1)	District (2)	Total local Residents (3)	Pop at risk by stratification (Area: A1+A2) (4)	Total Village (5)	A1 Village (6)	A2 Village (7)	% of at risk population (8)
<b>Ranong</b>	Kraburi	<b>46,742</b>	<b>31,446</b>	60	3	41	67.3%
	La-un	<b>14,044</b>	<b>7,003</b>	30	0	17	49.9%
<b>Chanthaburi</b>	Pongnamron	<b>42,689</b>	<b>23,973</b>	47	4	32	56.2%
	Soidao	<b>67,072</b>	<b>10,424</b>	68	2	20	15.5%
<b>Sakaao</b>	Klonghat**	<b>36,094</b>	<b>937</b>	69	0	4	2.6%
<b>Total in coverage area</b>		<b>206,641</b>	<b>73,783</b>	274	9	114	35.7%

(3) Mid-year census in June 2014 for Ranong; (4, 6, 7) is based on 2013 malaria stratification from BVBD in July 2014.

\*\*Situation analysis to be conducted to assess needs and gaps

### 3.3 Malaria prevention

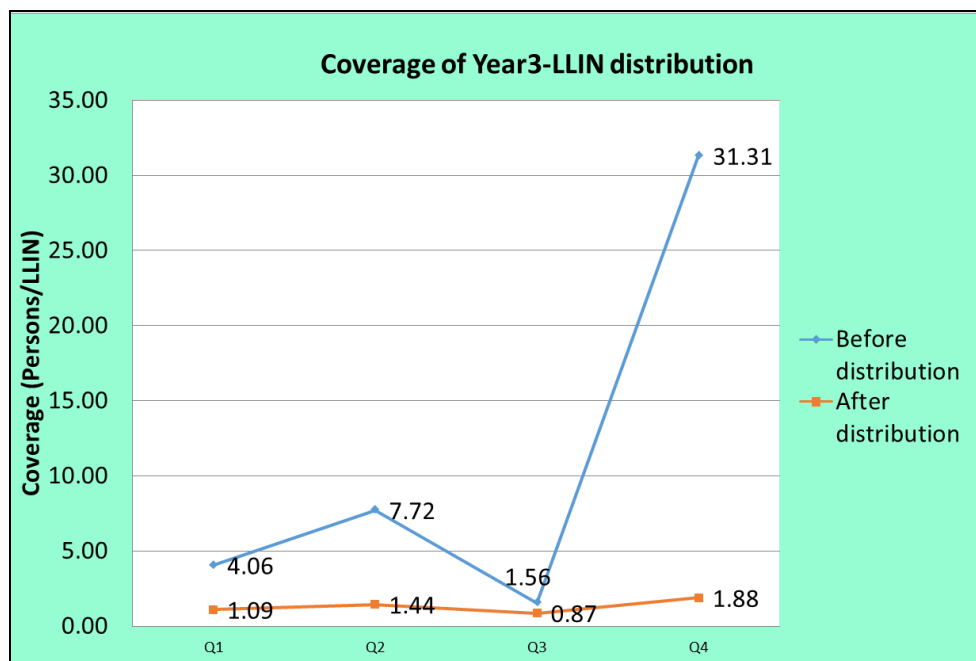
#### 3.3.1 Review of LLIN census, distribution and top-up activities in Year 3

CAP-Malaria distributed almost 10,000 LLIN (first lot) from the end of Year 2 and early Year 3 through household and farm distribution in 14 villages, and other community outreach activities. From our field experiences gather during farm visits for malaria outreach activities, we observe high migrants turnover in our villages. To assess if the LLINs previously distributed remain in good conditions in the villages and are in use by recipients, mostly among migrant population, CAP-Malaria team conducted repeat LLIN census (LLIN monitoring) in 9 out of 14 villages. Briefly, LLIN was distributed in Year 3 between Quarter 1 and 2 achieving 100% coverage of national target ( $\leq 2$  person per LLIN as previously reported CAP-Malaria annual report). CAP-Malaria then followed-up with monitoring activities in Year 3 between Quarter 3 and 4, approximately 3 to 6 months after the initial LLIN distribution campaign. Both LLIN census (monitoring) and LLIN distribution (or top-up activities) are conducted on the same day. Results are shown in Figure 2.

The results from LLIN census (monitoring) exercises showed that each time the team visit the same villages to assess LLIN use, information indicated that there were gaps in LLIN coverage. The LLIN coverage reflects the movement of migrant workers in the target areas where migrants engage in two types of work rubber tapping (Ranong province) and longan farming (Chanthaburi province). The high LLIN gap observed in Q3-Q4 coincided with harvest season (late June to Late August), where large numbers of migrants arrive into Chanthaburi within LLINs. The smaller peak of LLIN gap increase coincided with longan flowering season (late December to late February) where smaller number of migrant workers are needed to trim and prune the longan tree. The peak also coincided with the end of rainy season (from May to November) in Ranong where rubber tapping activities can begin. The reduction lower peak (high LLIN coverage coincide with start of rainy season in Ranong and waiting period for longan fruits. Most of the remaining migrants around this period are longer term stay migrants (M1).

Despite that caveat that we could not track individual migrant worker and individual LLINs distributed, the information suggests that a significant proportion of LLINs distributed to migrants do not remain in the target villages.

**Figure 2: Summary of LLIN monitoring activities in 9 out of 14 villages Ranong and Chanthaburi, approximately 3-6 months after LLIN distribution in Year 3. The blue line represents LLIN coverage on the day of census, based on the number of people monitored and the number of LLINs in their possession at the time of monitoring. The blue line represent LLIN coverage after top-up ( $\leq 2$  person per LLIN) on the same day of census.**



### 3.3.2 Community level LLINs distribution

To minimize overlap with ARC (in Ranong) and IOM (in Chanthaburi) as well as to demonstrate continuous LLIN coverage, CAP-Malaria focused LLIN distribution in 16 villages (4 villages in 4 target districts of Kraburi, La-un, Pongnamron and Soidao). The addition 2 additional villages in (from 14 villages in Year 3 to 16 villages in Year 4) Soi Dao districts were included after discussion with local PHO and DHO. Most of the LLINs were distributed through household (HH) or farm distributions, as well as community outreach activities. By focusing on the same targeted villages, CAP-Malaria also has the opportunities to monitor life-time of LLINs and their uses among the target communities.

*Note: CAP-Malaria malaria did not distribute LLINs in Klonghat district, Sakaeo province.<sup>1</sup> Based on assessment of Klong Hat district, Sakaeo province, most of the migrant workers cross the border daily while keeping residence in Cambodia near the border (consultation with Sakaeo Border Office, Sakaeo PHO and Klonghat DHO, and VBDU 6.2.5 Watthananakorn).*

A total of 20,000 LLINs was procured by USAID DELIVER/JSI for CAP-Malaria in 2 lots. The first lot of 10,000 LLINs arrived in late Year 2, and all but 585 LLINs were distributed in Year 3 (see also Section 3.3.1). In Year 4, the second lot of 10,000 LLINs arrived Quarter 2 around the same time as GF-procured LLINs.

<sup>1</sup> Note that in Year 4 workplan, CAP-Malaria proposed LLIN distribution in 20 targeted villages, or 4 villages for each of the 5 targeted districts. As pointed out later in this report, CAP-Malaria suspended LLINs distribution in Klonghat district, Sakaeo, as more than 85% of migrants are daily cross-border workers.

Local arrangements were made so that GF partners will complete their LLIN distribution first by Q2, and that information from partners to avoid overlapping distribution activities. For example in Kraburi district, ARC workplan claimed to cover all 44 malaria endemic villages (3 A1 villages and 41 A2 villages) with 700 LLINs allocated. After reviewing net census and distribution summary from GF-ARC, their data showed 3 villages overlap with CAP-Malaria's 4 targeted villages in Kraburi district. However, only 57 LLINs were distributed by ARC in only 1 of the 3 villages (Moo 9, Ban Nai Krang). Based on this observation, CAP-Malaria conducted LLIN census in 16 targeted villages mostly in Quarter 3 and 4 (approximately 1 year after Year 3 LLIN distribution). Table 2 shows details results from LLIN census and distribution for individual 25 target villages. Figure 3 shows summary of results by targeted districts.

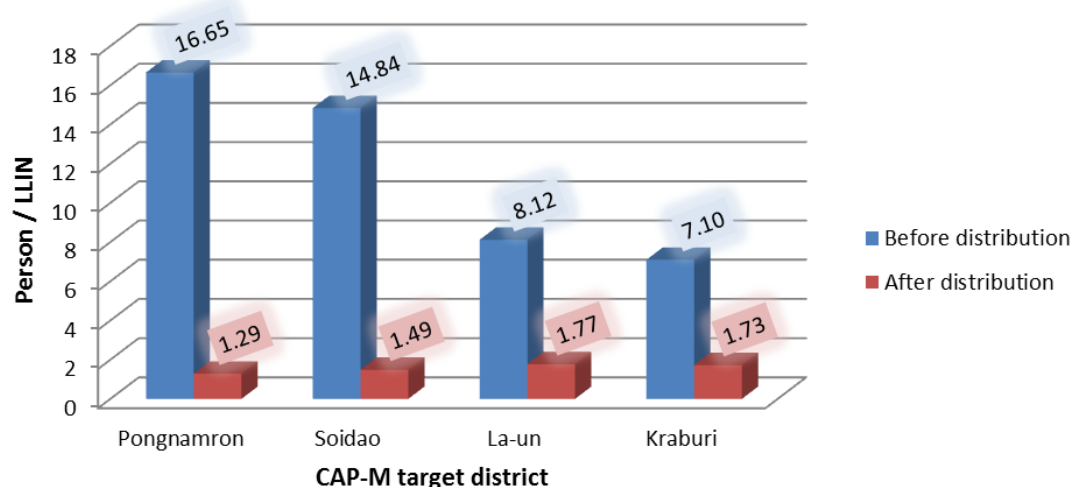
**Table 2: Results from LLIN distribution in 16 targeted villages in Kraburi and La-un districts (Ranong province) and Soidao and Pongnamron districts (Chanthaburi province) in Year 4.**

Moo	Village name	No. of HH received LLINs	Total Pop. Covered by LLIN distribution					No. of LLIN owned	Person/ LLIN (Before)	Total No. of LLIN distributed	Person/ LLIN (After)
			Thai		Migrant		Total (Thai+Migrant)				
			M	F	M	F					
Total LLIN distributed in Y4 Q1-2 (Ranong)										151	
Moo 3	Bangsongthong, La-un	70	89	88	55	47	279	38	7.34	151	1.48
Total LLIN distributed in Y4 Q3-4 (Ranong)										883	
Moo 1	Nai Rai, Bangpranua, La-un	34	34		172		206	23	8.96	103	1.63
Moo 2	Nai Yai, Bangpranua, La-un	47	45		131		176	19	9.26	75	1.87
Moo 3	Bangsongthong, La-un	14	14		39		53	4	13.25	21	2.12
Moo 5	Prukha, La-un	25	24		85		109	21	5.19	41	1.76
Moo 7	Klong ngoen, Pak Jun, Kraburi	79	77		368		445	46	9.67	227	1.63
Moo 7	Rang Tan, Jo Po Ro, Kraburi	33	30	7	86	53	176	15	11.73	74	1.98
Moo 9	Nai Krang, Jo Po Ro, Kraburi	105	104		485		589	130	4.53	209	1.74
Moo 10	Lumporlang, Pak Jun, Kraburi	40	39		221		260	16	16.25	133	1.74
Total in Ranong										1,034	
Total LLIN distributed in Y4 Q1-2 (Chanthaburi)										434	
Moo 5*	Subtamao, Pongnamron	9	5	4	106	80	195	-	∞	193	1.01
Moo 2*	Saikhao, Soidao	83	172	146	48	21	387	-	∞	241	1.61
Total LLIN distributed in Y4 Q3-4 (Chanthaburi)										1,685	
Moo 3	Nassanat, Pongnamron	34	28	9	215	187	439	5	87.80	315	1.37
Moo 4	Klongbon, Pongnamron	17	16	7	108	85	216	11	19.64	137	1.46
Moo 5	Khaothom, Pongnamron	55	53	28	229	202	512	6	85.33	373	1.35

Moo	Village name	No. of HH received LLINs	Total Pop. Covered by LLIN distribution					No. of LLIN owned	Person/ LLIN (Before)	Total No. of LLIN distributed	Person/ LLIN (After)
			Thai		Migrant		Total (Thai+Migrant)				
			M	F	M	F					
Moo 5	Subtamao, Pongnamron	19	15	12	69	44	140	42	3.33	108	0.93
Moo 7	Klongkot, Pongnamron	40	33	21	119	94	266	40	6.68	206	1.09
Moo 10	Wangkrating, Pongnamron	32	31	13	152	112	308	9	34.22	205	1.44
Moo 6	Saikhao, Soidao	43	55	21	171	150	396	20	19.85	229	1.59
Moo 2	Saikhao, Soidao	15	9	6	85	67	166	18	9.28	112	1.28
Total in Chanthaburi										2,119	
Total LLIN distributed in Y4 Q1-2										585	
Total LLIN distributed in Y4 Q3-4										2,568	
Total LLIN distributed in Year 4 (Q1-Q4)										3,153	

Note: \*Distribution of for new arrival migrants following notification and requests from CAP-Malaria volunteers.

**Figure 3: A graphical summary of LLIN census and distribution activities in 16 villages Ranong and Chanthaburi in Year 4, approximately 9 to 12 months after last LLIN distribution / top up in Year 3.**



Briefly, CAP-Malaria worked from the household registration list from each village to identify household/farms with migrant workers. CAP-Malaria team and volunteers then visit every farm to determine number of migrant workers and their LLINs. If a gap of LLINs is identified in the migrant household during census, distribution (top-up) is done on the spot and signatures are obtained from migrant head of household. Table 2 showed results of LLIN census and distribution in Moo 9, Nai Krang village by CAP-Malaria, just one quarter after GF-ARC reported conducting LLIN census of 128 farms/HHs and distributed 57 LLINs. CAP-Malaria team verified that some household did receive LLINs from ARC in the previous quarter, however, there were still significant gaps. Among the 105 farms visited, the

team surveyed 105 farm owners (or managers) and 485 migrant workers who owned just 103 LLINs (4.53 person per LLIN). CAP-Malaria team requested to see all the LLINs in their possession and distributed additional 209 LLINs to replaced broken nets and filled gaps to achieve coverage of 1.74 person pre LLIN.

### **3.3.3 *Monitor on net coverage and net use in selected CAP-Malaria target villages***

Observations from LLIN monitoring activities in Year 3 suggest that the annual LLIN distribution campaign is insufficient to maintain continuous high coverage LLINs among migrant population. However, conducting quarterly census in each of the target village is time consuming and require significant logistics and financial supports.

A simple monitoring system, a Lot Quality Assurance Sampling<sup>2</sup> (LQAS), was introduced for monitoring LLIN coverage and use. CAP-Malaria updated the Standard Operating Procedure (SOPs) to include quarterly LQAS in Quarter 1-2. The newly updated SOPs and data collection tools included modifications based on feedbacks of staffs when they were tested in Ranong with a few volunteers. In April 2015, CAP-Malaria Field Coordinators (FCs) were trained on the new updated LQAS LLIN monitoring SOPs<sup>3</sup>. CAP-Malaria conducted LLIN census to assess whether LLINs previously distributed to the communities 3 to 6 months prior still remain or in good conditions in Quarter 4 following distribution in Quarter 3.

### **3.3.4 *Community-level BCC/IPC***

Key actors are migrant volunteers (MVs) and Thai village health volunteers (VHVs) who provided health education (HE) through multiple channels of interpersonal communication (IPC). Key behavioral changes among these groups are (1) promote utilization of malaria services (early diagnosis), (2) improve compliance to follow-up and treatment, (3) improve knowledge and adoption of positive behaviors in malaria prevention; (4) increase awareness of drug resistant malaria, (5) care and use of LLINs. For cost effective measures, CAP-Malaria project country offices also work together to develop and share BCC/IEC materials used along the border areas. In such case, CAP-Malaria activities in Thailand also utilized these many of the same BCC/IEC materials for harmonization (See Annex 5.3 for some examples of BCC materials used in Thailand)

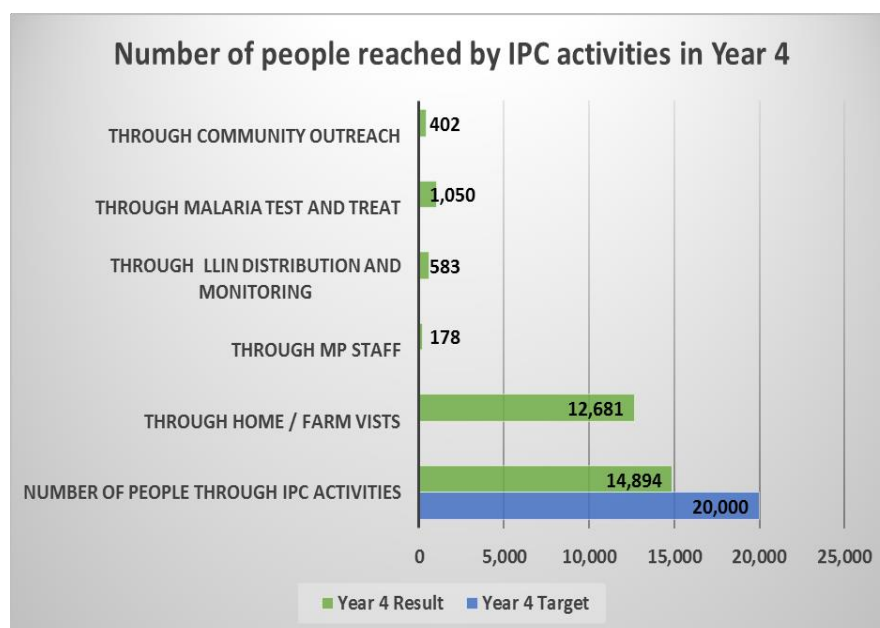
HE by IPC results are summarize in Figure 4. CAP-Malaria were able to reached 14,894 people by IPC (74.5% of target). The main reason for under target is due to the change in definition of IPC during Year 4 implementation. BCC activities through motorcycle taxi volunteers was previously included in the IPC activities, and is reported under non-IPC activities in this report. In Year 4, a total of 12,338 people were reached by motorcycle taxi volunteers who provided information on availability and location of malaria service delivery points to their passengers. In additional, CAP-Malaria also experienced high turnover of volunteers due to the declining prices of rubber and government plans to reform migrant worker policies.

<sup>2</sup> Biedron C., et al. (2010). *International Journal of Epidemiology*, 39:72-79.

<sup>3</sup> CAP-Malaria, SOPs for LLIN distribution and monitoring. (Last updated on February 2015)

CAP-Malaria emphasized the strategy of home or farm visits by volunteers or staff which makes up 85% of total people reached by IPC efforts. About 7% people were reached small group HE sessions by staff or volunteers during LLIN distribution and monitoring. CAP-Malaria volunteers also looked for opportunities to take advantage of local community events such as religious ceremony and weekly markets where Thai and migrant workers, and cross-border villagers would gather congregate. At the monthly meeting with MVs, CAP-Malaria staff collect HE report form, update information or local events about the community such as special events or new migrant arrivals or departures, and practice giving HE talks. MVs are notify about upcoming community outreach activities which may require their help to promote the activities in their community. In additional, approximately 8% of people were reached while receiving malaria screening service at MPs or HPHs.

**Figure 4: Summary of people reached by IPC activities in Year 4**

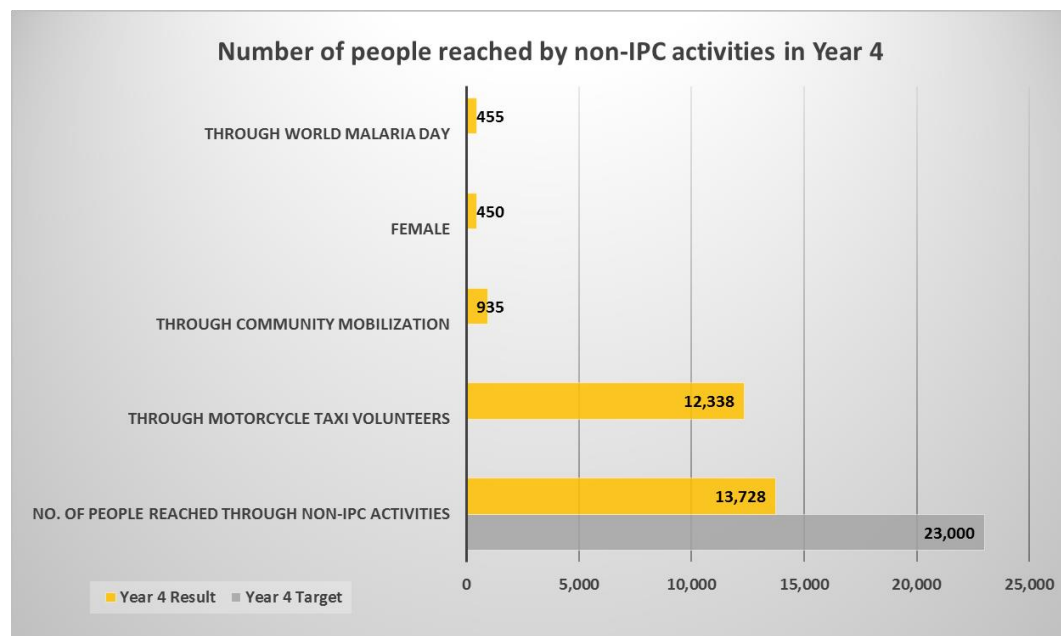


### 3.3.5 Community-level BCC/non-IPC

Similar to previous discussion, several factors contributed to the underperformance of this indicator (number of people reached by non-IPC). One of the factor is a significant number of migrants had returned to their hometown following the announcement that the new Thai government plan to reform policy on migrant workers. The large exodus of migrants was also fueled by false rumors that government were cracking down on non-status or illegal workers. Another major factor for large numbers of migrant departure, particularly in Ranong, is the falling prices of rubber (as low as 50% reduction in prices). Our MVs are also vulnerable to these factors, and can be seen by the number of volunteer dropout. Although we have trained more than 100 volunteers over the course of the projects (87 volunteers recruited by CAP-Malaria, and others recruited by NGOs and DHO). As of Year 4, CAP-Malaria has a network of 51 active MVs. Lastly, motorcycle taxi volunteer activities in Ranong were discontinued early in Quarter 3 after achieving 82% of annual target, after CAP-Malaria has learned that

GF/ARC started placing migrant liaison officers (ARC staff) to sit at motorcycle taxi stops to communicate with migrants who come to use motorcycle taxi services. Summary of results are shown in Figure 5.

**Figure 5: Summary of people reached by non-IPC in Year 4**



### 3.4 Malaria treatment and diagnosis

#### 3.4.1 Training of Health Facility (HF) staffs and community level workers

##### *Integrated malaria services with primary health services at HPHs*

The lowest unit of formal health service facilities in Thailand is the HPHs which did not offer malaria test and treatment services. Suspected patients are referred to Malaria Clinics (MCs) or MPs for malaria testing. Since there was no system to follow-up if the referred patients actually seek malaria tests immediate afterwards, these patients run a risk of delayed test and treatment that may lead to poor clinical outcomes, as well as potentially contributed to further malaria transmission. CAP-Malaria facilitated the integration of malaria case management services with the primary health services and antenatal services at the 8 HPHs in Ranong (La-un district) and 10 HPHs Chanthaburi (Soidao and Pongnamron districts) since Year 3.

Ranong PHO was informed in January 2015 that GF-RAI have included EDAT in HPHs. After several rounds of negotiation, five out of the eight HPHs in La-un district facilitated by CAP-Malaria since Year 3 were transferred to GF-RAI<sup>4</sup>. Training were delayed since GF-RAI could not start implementation until February 2015.

<sup>4</sup> The strategy was adopted into GF-RAI, however, their actual start delayed until February 2015. Five HPHs out of 8 HPHs in La-un district will be compensated with 1,000 THB per month to “maintain existing” malaria test and treatment services previously facilitated by CAP-Malaria at no cost.

**Table 3: Training in Malaria Diagnostics (RDT and/or microscopy) for Year 4, disaggregated by professional group and sex**

Activities	Y4	
	Target	Result
<b>Training on Malaria diagnostics</b>	<b>40</b>	<b>44</b>
Health facility (HPHs, lab)		44
Male		24
Female		20

*Note: A total of 3 HF staffs (1 male, 2 female) were trained in Quarter 1.*

**Table 4: Training in case management with ACT for Year 4, disaggregated by professional group and sex**

Activities	Y4	
	Target	Result
<b>Training on ACT case management</b>	<b>40</b>	<b>36</b>
Health facility (HPHs, lab)		36
Male		17
Female		19

*Note: A total of 3 HF staffs (1 male, 2 female) were trained in Quarter 1.*

Ranong – CAP-Malaria supported training of 8 HPH staffs on malaria diagnosis using RDT. Training on malaria case management with ACT was provided by Ranong PHO.

Chanthaburi – In May 2015 (Quarter 3), a second round of training workshop for 16 HPH staffs (refresher and new) from HPHs in malaria endemic districts in Soidao and Pongnamron districts, as only 3 participants were able to participate in the first round of training of malaria diagnosis and case management in Quarter 2. The rational for expansion of this activity is the closure of one VBDU/MC in Pongnamron. Chanthaburi is not in the GF-RAI workplan

Sakaeo – CAP-Malaria advocated for the expansion of integrated malaria services to 5 HPHs in endemic areas of Klonghat district, which shares border with Sampov Loun, Cambodia. Training was scheduled for April 2015 with participation from Vector Borne Diseases Center (VBDC), VBDU, and DHO. There 8 people who received training in malaria diagnostics and 33 people received training on case management with ACT. The rational for expansion in Klonghat is that there is no MP or BMPs, or MC in the district. Sakaeo is not in GF-RAI workplan.

Integration of malaria services with primary care and ante-natal care at HPHs, in Ranong and Chanthaburi in target areas, is another successful demonstration of CAP-Malaria strategy for sustainable malaria control and prevention efforts. CAP-Malaria provided technical assistant as co trainer/co-facilitators for HPH staff.

### **3.4.2 Case finding and treatment**

In this reporting period, CAP-Malaria supported 4 Malaria Posts (MPs) in La-un district that provide direct malaria screening and treatment services, and support for monitoring of malaria services at 3 HPHs in La-un district and 19 HPHs in Pongnamron and Soidao district.

### *EDAT at Malaria Posts (MPs) in La-un District, Ranong*

CAP-Malaria temporary suspended assistance to Thai government and government staff, which included support to PHO/DHO to maintain and supervised MPWs and HPHs in Quarter 3, Year 3. When MP activities resumed in Year 4, there was also discussion on exit plant. The following recommendations were implemented to support MP in Year 4.

- In addition to maintaining EDAT in their home, MPWs will conducted home/farm visits or outreach HE activities at least 3 times per month. MPWs were compensated 1,500 THB per month for their passive case detection activities to accommodate disbursement restrictions through government staff. The new incentive structure represent 50% reduction in cost.
- CAP-Malaria assisted in helping to offset cost of MP monitoring and supervision per GF-SSF and GF-RAI rate (500 THB per MPs or HPHs per month). However, within this budget DHO will also lead monitoring and supervision of 5 HPHs not under GF-RAI. The monthly monitoring and supervision by DHO includes collection and review of monthly information for timely submission to the MIS, and checking of malaria commodity supplies.

**Table 6: Summary of case finding activities supported by CAP-Malaria in Ranong province, Year 4, compared to the same period in Year 3**

Year	Org.	Sex	Q1			Q2			Q3			Q4			M/F/Total	Thai/M1/M2
			Thai	M1	M2	Thai	M1	M2	Thai	M1	M2	Thai	M1	M2		
Year 4	HPH	Male	7	20	4	6	11	1	0	2	0	3	1	0	55	29
		Female	2	9	0	4	5	1	2	0	1	5	2	0	31	50
		Total	9	29	4	10	16	2	2	2	1	8	3	0	86	7
	MP	Male	22	48	3	83	94	0	41	43	0	43	38	0	415	376
		Female	40	34	16	82	103	0	37	26	0	28	23	0	389	409
		Total	62	82	19	165	197	0	78	69	0	71	61	0	804	19
	<b>Y4 Grand total</b>		<b>71</b>	<b>111</b>	<b>23</b>	<b>175</b>	<b>213</b>	<b>2</b>	<b>80</b>	<b>71</b>	<b>1</b>	<b>79</b>	<b>64</b>	<b>0</b>	<b>890</b>	<b>890</b>
Year 3	HPH	Male	0	0	0	0	0	0	10	13	1	14	7	0	45	40
		Female	0	0	0	0	0	0	13	6	0	3	11	1	34	37
		Total	0	0	0	0	0	0	23	19	1	17	18	1	79	2
	MP	Male	25	35	17	22	27	11	88	107	14	73	85	14	518	448
		Female	19	37	9	21	17	17	91	94	8	109	52	14	488	454
		Total	44	72	26	43	44	28	179	201	22	182	137	28	1006	104
	<b>Y3 Grand total</b>		<b>44</b>	<b>72</b>	<b>26</b>	<b>43</b>	<b>44</b>	<b>28</b>	<b>202</b>	<b>220</b>	<b>23</b>	<b>199</b>	<b>155</b>	<b>29</b>	<b>1085</b>	<b>1085</b>

*Note: From October 2014 to December 2014, CAP-Malaria supported 4 MPs and 8 HPHs in La-un district. From January 2015, CAP-Malaria supported 4 MPs and 3 HPH in La-un district. In Year 4, CAP-Malaria also planned to expand support in monitoring and supervision of 6 HPHs (out of 11 HPHs) in Kraburi not covered by GF-RAI. Activities were delayed due to coordination with GF-RAI/Ranong PHO, until Quarter 4.*

Five HPHs were transferred to GF-RAI in January 2015, therefore we start to see decrease in testing numbers form Quarter 2 onward. Bangkaew Nai, Bangkaew Nok, Bangphra Nua, La-un Nua, and Waree HPHs were transferred to GF-RAK. La-un Tai, Naiwong Nua, Naiwong are in lower transmission area and therefore have lower testing numbers. Four MPs are also testing lower number of people compared to Year 3 in parts because of many migrants return for work in Myanmar where the wages are improving, and in parts because malaria has also decrease this year.

**Table 7: Summary of case finding by HPHs in Soidao and Pongnamron district, Chanthaburi province Year 4.**

Year	Org.	Sex	Q1			Q2			Q3			Q4 (Update not finished)			M/F/Total	Thai/M1/M2
			Thai	M1	M2	Thai	M1	M2	Thai	M1	M2	Thai	M1	M2		
Year 4	HPH	Male	20	3	1	19	3	1	5	2	0	12	3	1	70	151
		Female	30	7	4	23	6	5	16	2	3	26	8	1	131	34
		Total	50	10	5	42	9	6	21	4	3	38	11	2	201	16
	Y4 Grand total		50	10	5	42	9	6	21	4	3	38	11	2	201	201
Year 3	HPH	Male	0	0	0	0	0	0	0	0	0	8	1	0	9	16
		Female	0	0	0	0	0	0	0	0	0	8	0	0	8	1
		Total	0	0	0	0	0	0	0	0	0	16	1	0	17	0
	Y3 Grand total		0	0	0	0	0	0	0	0	0	16	1	0	17	17

Note: CAP-Malaria planned to expand support in monitoring and supervision from 10 HPHs in Year 3 to all 19 HPHs in Pongnamron and Soidao districts in Year 4. Activities were delayed due to coordination with Chanthaburi PHO and with GF to leverage RDT supplies.

In the 1<sup>st</sup> quarter of implementation (Year 3, Quarter 4), most of the patients tested for Malaria at 10 selected HPHs in Chanthaburi are Thai. Though more migrants, particularly M2 are seeking malaria services at HPH.

### 3.5 Use of malaria information

**Expansion of EDAT at HPHs** – Results from integrated malaria services in HPH in La-un districts and selected HPHs in Chanthaburi were used to advocate for expansion of activities in 100% of HPHs in Kraburi, Pongnamron and Soidao districts, as well as HPHs in endemic areas in Klonghat districts.

**Use of instant messaging mobile application for case notification and coordination in Pongnamron and Soidao** – LINE instant messaging mobile application were introduced to help with timely sharing of information and case notification. MIS is useful for analysis of malaria trend and tracing project progress, however, the day-to-day use of MIS in malaria surveillance and responses is limited as the system required data entry person to log-in and key the case information. In practice, the designated data entry person is not the person who provide the malaria testing service and enters malaria case reports into MIS weekly or monthly depending on the motivation of the staff. The LINE messaging application is currently used in Chanthaburi for same-day case notification from providers to local malaria control partners for coordination in malaria responses. Figure 5 shows a collection of screen shots of same-day case notification. (See Annex 4 Success Story for more information).

**Cross-border notification of malaria trend** – Although the caseload is small, the local team did noticed a cluster of *Pf* cases among migrants in Jan/Feb 2015. CAP-Malaria/Thailand notified CAP-Malaria/Cambodia to review malaria data in Pailin and Sampov Loun operation districts which shared border with Pongnamron and Soidao. CAP-Malaria/Cambodia confirmed with project data and MIS. Though proportion of *Pf* did not increase in Pailin, but a small increase was shown in Sampov Loun during the same period. CAP-Malaria facilitated exchange of information include results from case investigation conducted by twin-cities counterparts. Among M2 proportion of *Pf* cases during this reporting period was 11% in Pongnamron and 30% in Soidao (compared to 5% and 7% in FY2013, respectively).

Gender assessment and LLIN monitoring results – Gender assessment report and project LLIN monitoring results provide useful insights into LLIN care and use in the target community. Gender Assessment was conducted and report in Year 4.<sup>5</sup> Male and female residents and migrants knew about benefits of insecticide treated bed nets, however, women knew more and pay more attention to LLIN care instruction. Men were also more fickle in their use of bed nets, particularly in hot and humid temperature or their judgement is impaired (e.g. when intoxicated). HE would put additional focus in providing simplified LLIN care instruction to men, as well as ensuring that more women are included in the LLIN distribution and monitoring activities.

When symptoms appear, men tend to wait while women seek treatment sooner. In our experience and observed in the gender assessment activities, migrants may wait longer as they tend to wait before informing their employers to take them to seek medical help. CAP-Malaria would put additional focus on early and free diagnosis, as well as availability of nearby services in their community during HE outreach. CAP-Malaria is targeting employers and their employee during outreach activities due to their interdependency.

Information from LLIN monitoring are shared with local partners in order to mobilize existing LLINs in the areas to provide greater coverage.

### **3.6 Technical Support on Therapeutic Efficacy Surveillance (TES) Studies**

TA focused on completion and submission of 4 TES proposals, implementation, site monitoring and training plans (milestone 1) to PMI/USAID/RDMA and the ethical committee. Monitoring visits were conducted to the sites. Meetings were held with PHO and VBDC on strengthening the linkages and referral from the MPs, district hospital and MCs.

*Please refer to Annex 5.2 for detail summary on technical support on TES activities.*

### **3.7 Twin-Cities model for cross-border collaborations**

#### **3.7.1 Kawthoung – Ranong**

Highlights include:

- 🌐 Twin-cities meeting on May 20-22, 2015 – “Border Health Collaboration Meeting and Joint RRT/SRRT Refresher Training on Disease Surveillance, Outbreak Investigation and Response in the Border Areas between Kawthoung of Myanmar and Ranong Province of Thailand.” Meeting was organized by Ranong PHO with funding from TICA for meeting and transportation from Kawthoung to Ranong. CAP-Malaria facilitated the discussion on border health collaborations. CAP-Malaria also supported travel cost from Tanintharyi Health Department from Dawei to Kawthoung.

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<sup>5</sup> CAP-Malaria gender assessment report can be accessed on [www.capmalaria.org](http://www.capmalaria.org). In addition, the report will be deposited in the USAID’s Development Experience Clearinghouse <https://dec.usaid.gov/dec/home/Default.aspx>

- ✚ Twin-cities meeting in September 4, 2015 – “Twin-cities working group meeting between Kawthoung and Ranong” was organized by Kawthoung Medical Office with facilitation by CAP-Malaria. GF-TB/Burma and GF-RAI/Burma/ARC also contributed some funding to support the meeting held in Kawthoung. Ranong PHO supported their own travel cost.
- ✚ Expansion of Twin-Cities collaborations to engage not only the provincial levels but also the district and community levels.
- ✚ Twin-Cities activity to assist Thai DHO to properly trained Burmese MVs
- ✚ Support Volunteer network between VMWs (Kawthoung) and MVs (Ranong) with the objectives to (1) mobilize communities on the borders on malaria awareness and engagement in malaria control; (2) inform health workers of local events, activities, or situations that may have an effect on health, (3) motivate migrant volunteers to stay engaged while living or working on either sides of the borders.
  - The cross border buddy volunteer network meets on a quarterly schedule since September 2014. Most recent volunteer network meetings occurred on August 2015 which coincided with malaria outreach activities in Ban Had Tun, Moo 8 village, in Kraburi.
  - Cross-border coordination also involved reaching out to Wine Din village in Kawthoung (Burma), across the river from Ban Had Tun, Moo 8 village.
  - In addition, the Malaria Inspector from Kawthoung and CAP-Malaria also coordinate with the Toe Tat Aung and Nay Kyar Companies, private rubber plantations near to bring migrants cross the river to Ban Had Tun village for malaria outreach activities and LLIN distributions. Logistically, this was easier as it would take more than 4 hours in good weather for Burma staff to reach Toe Tat Aung plantation. In comparison, the trip from Toe Tat Aung plantation to Ban Had Tun village (Kraburi) would take under an hour.
  - Joined efforts conduct outreach HE activities with health staff and volunteers from Kawthoung and Ranong.
    - Malaria screening by VBDU and CAP-Malaria staff.
    - Health education and LLIN distribution by CAP-Malaria volunteers from Kawthoung and Kraburi.
    - General health screening and distribution of first-aid kit by Health Promotion Hospital (Thailand).

### **3.7.2 Pailin – Chanthaburi and Sampov Loun – Sakaeo**

*Please refer to Section “2.3.2 Multi-sectoral collaboration and coordination promoted: Twin-Cities Collaboration” in the Cambodia component of Semi-Annual Progress Report, Y4 Q1-2, for more details of activities.*

Highlights include:

- Twin-Cities meeting (December, 17, 2014) conducted in Sampov Loun, Cambodia, led by Battambang Provincial Health Department and Sampov Loun Operational District (OD) Health. A draft report is available through CAP-Malaria website

([www.capmalaria.org](http://www.capmalaria.org)). A final report, endorsed by Twin-Cities counterparts will be available through the same channel.

- Twin-cities meeting (August 14, 2015) conducted in the meeting room at Ban Laem Market, Chanthaburi, Thailand, hosted by Chanthaburi PHO.
- **Monthly data sharing**
  - o Pailin and Chanthaburi is done regularly
  - o Sampov Loun and Sakaeo will start to share information.
  - o Sharing will expand from Malaria to include 15 infectious diseases. CAP-M will facilitate drafting of Letter of Agreement between Twin-Cities counterparts signed and exchanged on August 14, 2015.
- **Bilingual BCC tools targeting patients** introduced in Pailin-Chanthaburi. Bilingual cards were introduced to help patients and providers keep track of patient's DOT and FU appointments previous year. In Year 4, CAP-Malaria also produced patient's information material to be used in HPHs as part of expansion of malaria services.
  - o Life course poster is to reduce migrant patient's anxiety when accessing services at formal HPHs.
  - o Thailand's NTG for *Pf* and *Pv* include PQ regimen. Cambodian population carry higher level of G6PD mutations than other SE Asian population, yet promote of potential PQ side effects has not been included as part of health staff training or for BCC activity.
  - o Both posters have finalized and tested in Chanthaburi and Sampov Loun among migrant workers. (See Annex 5.3).

## 4 SUCCESS STORIES

In this reporting period, CAP-Malaria story will feature they use of LINE mobile messaging application to improve communication and coordination between implementing partners in Pongnamron and Soidao districts, in Chanthaburi province. Although, the initiative is still in its early stage the feedbacks from the users have been really positive and CAP-Malaria staff noticed signification improvement in communication and coordination with malaria control staff. The amount of time spent on communication and coordination by Field Coordinator have significantly reduced and our staff and volunteers can spend more time conducting targeted community outreach in malaria hotspots. (See Section 5.4, Annex 5).

## 5 ANNEXES

### 5.1 Annex 1 – Quantitative targets for Y4 and results for Y4 Q1-4

**Table 8: Quantitative Targets and Results (Oct 2013 – Sep 2014):**

*Project Performance Results from October 1, 2014 to September 30, 2015*

No.	Indicators	Target	Actual
<b>F Indicators</b>			
1	Number of ITNs purchased in any fiscal years with USG funds that were distributed in this reported fiscal year (OP2F)	10,000	4,355
2	Number of health workers trained in case management with Artemisinin-based combination therapy (ACTs) with USG funds (OP3F)	40	36
	Male	-	17
	Female	-	19
	Number of health facility workers trained	-	36
	Male	-	17
	Female	-	19
	Number of community-level workers trained	-	0
	Male	-	0
	Female	-	0
3	Number of health workers trained in malaria laboratory diagnostics (rapid diagnostic tests or microscopy) with USG funds (OP4F)	40	44
	Male	-	24
	Female	-	20
	Number of health facility workers trained	-	44
	Male	-	24
	Female	-	20
	Number of community-level workers trained	-	0
	Male	-	0
	Female	-	0
<b>Project Indicators</b>			
4	Number of individuals reached with BCC messages through interpersonal communication (IPC) in CAP-M target areas (OP7)	20,000	14,894
	Male	-	7,993
	Female	-	6,901
4.1	Number of individuals reached with BCC messages through non-interpersonal communication (non-IPC) in CAP-M target areas (Motorcycle taxi)	15,000	12,338
	Male	-	6,232
	Female	-	6,106

No.	Indicators	Target	Actual
4.2	<i>Number of individuals reached with BCC messages through non-interpersonal communication (non-IPC) in CAP-M target areas (Community outreach)</i>	8,000	1,390 <sup>a</sup>
5	<b>Number of malaria tests performed (OP8)</b>	-	1,116
	<i>Disaggregated by Sex</i>	-	1,116
	<i>Male</i>	-	554
	<i>Female</i>	-	564
	<i>Disaggregated by provider</i>	-	1,116
	<i>Reported by Health facility</i>	-	312
	<i>MPs supported by CAP-Malaria</i>	-	804
6	<b>Number pf confirmed malaria cases detected through CAP-M supported facilities (OP9)</b>	-	9
	<i>Disaggregated by Age</i>	-	
	<i>Age &lt; 5</i>	-	0
	<i>Age =&gt; 5</i>	-	9
	<i>Disaggregated by Sex</i>	-	9
	<i>Male</i>	-	3
	<i>Female</i>	-	6
	<i>By species (Microscope &amp; RDT: HRP2Pf/Pan)</i>	-	9
	<i>Number of Pf cases</i>	-	4
	<i>Number of non-Pf cases</i>	-	5
	<i>Number of mix cases</i>	-	0
	<i>Disaggregated by provider</i>	-	9
	<i>Reported by Health facility</i>	-	8
	<i>MPs supported by CAP-Malaria</i>	-	1
7	<b>% of uncomplicated malaria cases treated according to national malaria treatment guideline in CAP-M target areas (OC3)</b>	>90%	78% <sup>b</sup>
	<i>Number of uncomplicated malaria cases treated according to national malaria treatment guideline in CAP-M target areas (OP10)</i>	-	9
	<b>Other project indicators</b>		
8	<b>% of individual slept under ITN previous night (OC1)<sup>6</sup></b>	>90%	-
9	<b>% of PMI/USAID assisted service delivery points that experienced stock out of first line ACT and RDT on date of visit (OP15 and OP16)</b>	>90%	-

<sup>a</sup> In Year 4, Semi-annual (Quarter 1 and 2) report, a total of 1,497 people were previously reported. In this report the number is reduced to 1,390 as the appropriate source documents from the field cannot be verify by the M&E team.

<sup>b</sup> This indicator was added in Year 4 with strict verification of source document (EP1 form). In practice, if providers forgot to document number of tablets or dose of tablets, we count this as non-compliance to NTG despite secondary verification such as pill counting to determine compliance to NTG.

Note: Indicator numbers are in-line with updated M&E plan submitted in October 2015 (version Oct 15, 2015).

<sup>6</sup> Information from baseline migrant KAP surveys in Kraburi district, September 2013. Not that only the question asked "Did you sleep under bed net last night?" including convention and ITN to understand net use culture. Approximately 45% of people who reported sleeping under bed nets previous night, slept under ITNs.

## 5.2 Annex2 – Summary of TA on TES activities and results, Year 4

The PMI|USAID Strengthening of Prevention and Control of Malaria (SPAC-Malaria) project was granted to the BVBD as a government-to-government grant, in-line with USAID Forward initiative. CAP-Malaria has been providing TA to BVBD in the development of SPAC-Malaria Period 1 (October 2012 to September 2013) and Period 2 (October 2013 to September 2016). CAP-Malaria technical assistance and technical support in the development of SPAC-Malaria Round 1 proposal and the implementation of workplan which included malarial control and prevention activities in Thasongyang district, Tak province, and Therapeutic Efficacy Study (TES). Under SPAC-Malaria Round 2, CAP-Malaria TA roles have focused on TES.

During Year 4 (FY2015), CAP-Malaria continued to provide management and technical support to the BVBD TES team to implement TES study Round 1 and Round 2 under the SPAC Malaria projects.

### TES highlights of activities

- ✚ Close-out of TES Round 1 of Chloroquine (CQ) protocol in Ranong, Tak and Chanthaburi on July 28, 2015.
- ✚ Approval of 4 TES Round 2 protocols by the MoPH Ethical Committee in July and September 2015.
- ✚ Site monitoring visits
- ✚ Conducted training on TES Protocols and Good Clinical Practice (GCPs) / Research Ethics (RE) at the Rich Hotel, Nonthaburi province on July 20-22, 2015 for 59 participants from malaria clinics, VBDC, VBDU, and ODPC.
- ✚ Conducted preliminary data analysis for TES Round 1 by reviewing the hard copy of the CRF and electronic data based.
- ✚ The new national treatment guideline for DHA-PPQ will be completed and implemented by October 2015 on the 7 provinces namely: Tak, Kanchanaburi, Ranong, Surin, Srisaket, Ubon-Ratchathani and Trat.

### TES study

CAP-Malaria project provide technical support to BVBD during the implementation of 2 rounds of TES protocols under SPAC Malaria projects (Period 1 and Period 2). Table 9 summarized the TES protocols and status supported by PMI|USAID SPAC Malaria project.

**Table 9: Summary of Round 1 and Round 2 TES protocols and their status.**

	Sentinel Sites	Targets		Antimalarial Drug	Number of patients enrolled		LFU	ETF	LCF	LPF	AE	SAE	Remarks
		Pf	Pv		Pf	Pv							
Round 1 (1.1)	Kanchanaburi	50		DHA-PPQ	34		0	0	0	0	0	0	End of study date on July 28, 2015
Round 1 (1.2)	Tak		50	CQ		51	0	0	0	0	0	0	

	Chanthaburi		50	CQ		24	5	1	0	0	0	0	
	Ranong		50	CQ		54	5	1	0	2	0	0	
Round 1 (1.3)	Mae Hong Son		50	AS+MQ		-	-	-	-	-	-	-	Protocol was not approved by IRB.
	Ratchaburi		50	AS+MQ		-	-	-	-	-	-	-	Protocol was not submitted to IRB in Round 2 as there are previous year results supported by WHO.
	Tak		50	AS+MQ		-	-	-	-	-	-	-	
Round 2 (2.1)	Kanchanaburi		50	CQ									Protocol approved by IRB on the 3 <sup>rd</sup> Week of July
	Srisaket		50	CQ									
Round 2 (2.2)	Ranong <sup>1</sup>	50		DHA-PPQ									Protocol approved by IRB on the 3 <sup>rd</sup> Week of September
	Ubon Ratchathani <sup>1</sup>	50		DHA-PPQ									
Round 2 (2.3)	Chumporn		25	AS+MQ									Protocol approved by IRB on the 3 <sup>rd</sup> Week of September  Chumphon, Songkhla, Prachuabkhirikhan, Srisaket, Surat Thani, supported by PMI USAID  Surat Thani and Yala activities supported by RAI
	Songkhla <sup>2</sup>		50	AS+MQ									
	Srisaket		50	AS+MQ									
	Prachuabkhiri khan		25	AS+MQ									
	Surat Thani,		50	AS+MQ									
	Yala		50	AS+MQ									
Round 2 (2.4)	Tak		50	AS+PYD									Protocol approved by IRB on the 3 <sup>rd</sup> Week of September

<sup>1</sup> TES (DHA-PPQ) protocol added based on summary results of TES (AS+MQ) from 2008-2012 that showed cut-off threshold at 90% for ACPR and  $\geq 10\%$  for Day 3(+) rates. Adequate Clinical and Parasitological Response (ACPR) or the absence of parasites on Day 28 irrespective of symptoms, or criterial for ETF, LTF, or LPF.

<sup>2</sup> Songkhla added as a new TES site because MIS in FY2012 showed that 3.5% of 797 *Pf* cases were Day 3(+) under AS+MQ treatment guideline.

AS-artesunate, MQ-mefloquine, PPQ-piperaquine, CQ-chloroquine, PYD-pyronaridone, LFU-loss to follow up, ETF-early treatment failure, LCF-late treatment failure, LPF-late parasitological failure, AE-adverse event, SAE-serious adverse event

### Site monitoring activities

CAP-Malaria conducted joint monitoring visit and on-site coaching alongside BVBD TES team to the study sites (see Table 10). These monitoring visits focused on improving the skills of sentinel site staff on data management systems, laboratory procedures, documentations. CAP-Malaria worked closely with the BVBD TES team and sentinel sites staff to ensure that all procedures are being followed correctly. Meeting was also with Chanthaburi PHO and VBDC to strengthen the referral linkages of patients diagnosed at the HPHs, MPs and BMPs to the malaria clinic or VBDU where malaria cases showed declining trend.

As part of the routine monitoring visits, monitoring checklist were used to ensure that the sentinel site staff follows protocol and GCP requirements. These included the source document verification to ensure the use of standardized forms and their completeness and correctness, as well as storage condition of essential documents on sites. Storage and supplies and storage condition of antimalarial for TES are also monitored along with labeling and storage of patient's samples. In addition, soft-skills are also monitored such as interview

of staff with regards to their understanding of TES protocols and their respective roles. After the monitoring visit, a debriefing with the VBDU chief, study site staff are conducted to review and discuss progress and issues, as well as plans and time-line for addressing recommendations. In total 48 study site staffs (39 male, 9 female) were visited and provided with on-the-job coaching.

Special closed-out visits were conducted in Chanthaburi and Ranong sentinel sites. In addition, site preparation visits were also conducted to initiate the approved TES Round 2 protocols according to the GCP requirements and to ensure sufficient supplies/materials.

**Table 10: Summary of joint TES site monitoring visits conducted in Year 4.**

Province	Dates	Notes
Tak	October 20-22, 2014	Site monitoring visit
Chanthaburi	December 17-19, 2014	Site monitoring visit
	June 22-24, 2014	TES Chloroquine- Pre-close out visit
Kanchanaburi	December 24-26, 2014	Site monitoring visit
	September 14-16, 2015	- Site monitoring for the on-going TES DHA-PIP - Site initiation visit for the TES CQ
Ranong	August 4-5, 2015	Close out visits for TES CQ
Srisaket	September 7-11, 2015	Site initiation visit for TES CQ

#### Capacity building activities

Work closely with designated BVBD staff to increase capacity in TES program management through advocacy, coaching and technical support.

**Table 11: List of BVBD's TES team.**

Name	Title	Sex	TES roles
Dr. Sanchai Chasombat	Deputy Director	M	Co-PI and TES Team Leader
Dr. Wichai Saitimai	Senior Advisor	M	Site monitor (Lead)
Suna Jongsomboonkusol	Coordinator (SPAC)	F	Coordination and technical support
Theerayot Kobasa	Assistant Team Leader	M	Site monitor, data analysis
Rungniran Sug-aram	Technical Officer	M	Prepare protocols, data analysis
Suravadee Kitchakorn	Technical Officer	F	Prepare protocols, data analysis
Ampai Darakapong	Laboratory Technician	F	TES data entry
Thirasak Hoonchaiyaphum	Laboratory Technician	M	TES data entry

CAP-Malaria also provided logistics and technical support to BVBD to organize training on TES Round 2 Protocols and GCP/RE in July 2015. The training aim is to provide an overview of the TES protocol and procedures and GCP/GLP/RE; and to improve the sentinel sites staff skills, confident and knowledge to implement TES protocol according to GCP requirements. The training was divided into sessions and includes different teaching methods such as presentations, open discussions, role playing, and group discussions. The training was evaluation by using the pre-and-posttest questionnaires as part of the BVBD M/E procedures. A total of 59 staffs (49 male, 10 female), particularly those from study sites, participated in the 3-days training in Bangkok. The quantitative numbers are reported by BVBD in SPAC-Malaria progress report.

## Routine Coordination meetings




### *Scheduled meetings with PMI/USAID/RDMA and WHO*

- Assisted in the preparation of documents, presentation slides or briefing kits for PMI/USAID, Malaria No More and USCDC Atlanta visits to BVBD.
- Monthly meeting with Dr. Dorina Bustos, Malaria Technical Officer to further discussed the TES protocols, forms, training, site monitoring visits and challenges in the protocol IRB submission and recruiting patients.




### *BVBD*

- Regular project management meetings with the TES team and reported on the achievements, challenges in the course of implementation were discussed and the areas for improvement.
- Preparation of the required documents for submission of milestones and documents to PMI/USAID/RDMA.
- Postponement of Round 1 TES dissemination (previously scheduled in September 2015) to FY2015, due conflicting scheduled of BVBD staff and delayed reports from TES study sites.




## Other meetings

-  *On April 30*, met with PMI/USAID/USCDC and BVBD and discussed on the malaria situation, National Elimination plan, SPAC and TES achievements and challenges.
-  *On June 4*, met with BVBD, WHO and PMI/USAID/RDMA on the completion of the new treatment guideline on DHA-PIP for *P. falciparum*, algorithm and training plan for Oct 2015. DHA-PIP guideline will be for 7 provinces (Tak, Kanchanaburi, Ranong, Surin, Srisaket, Ubon Ratchathani and Trat). DHA-PPQ has been ordered.
-  *On August 20 - 26*, meeting with BVBD (Director and Deputy Director) and CDC/Thailand (John MacArthur), US-CDC/Atlanta (Kumar Venkatachalem), and PMI/USAID/RDMA (Mark Fukuda, and David Sintasath)
  - The purpose of the visit is to understand areas for CDC-BVBD collaboration, BVBD laboratory training needs, particularly in molecular testing to support national treatment policies. The discussion also included capacity building of BVBD lab technicians in molecular techniques including DNA sequencing and plan to invite at least 2 lab staff for training in US-CDC/Atlanta.
  - BVBD also plans for molecular surveillance of K13 mutation and *pfmdr1* gene copy number from TES filter paper samples through the Faculty of Tropical Medicine, Mahidol University.
  - Other areas of supports include
    - Strengthening of QA management in BVBD
    - Technical skills for in-depth analysis of national MIS data (formerly BIOPHIC) from 2007 to 2014.

### 5.3 Annex 3 – Example of bilingual BCC / catalogues of bilingual BCC

No	Product	Description
1		<p><b>Type of BCC material:</b> Flipchart (Job Aid)</p> <p><b>Objective :</b> Used by service providers in malaria education sessions</p> <p><b>Key messages:</b></p> <ul style="list-style-type: none"> <li>- Malaria is caused by mosquito bits</li> <li>- Sleeping under LLIN/LLIHN prevents malaria</li> <li>- Malaria signs/symptoms (chills, fever, sweating and headache)</li> <li>- Seek malaria treatment with VMW/HC staff if you suspect malaria</li> <li>- By following provider prescription exactly, your malaria will be cured</li> </ul> <p><b>Target audience:</b> Used by MVs and VHVs to provide health information to migrant communities in Thailand.</p> <p><b>Number produced:</b> 2,300 flipcharts produced for Cambodia and shared with Thailand for use by MVs and VHVs</p> <p><b>Distribution :</b> project target areas</p>
2		<p><b>Type of BCC material:</b> Poster and pamphlets (in Burmese and Khmer for distribution along with LLINs)</p> <p><b>Objective :</b> To promote correct use and care LLIN</p> <p><b>Key message:</b> How to properly care for LLIN</p> <p><b>Target audience:</b> at-risk residents and mobile/migrant populations</p> <p><b>Number of production:</b> 10,000 sheets (produced in Cambodia and shared with CAP-Malaria/Thailand).</p> <p><b>Distribution:</b> In Thailand, the pamphlet is produced to be included in the LLIN package during LLIN distribution.</p>
3		<p><b>Type of BCC material:</b> bilingual poster</p> <p><b>Objective :</b> distribute to cross-border migrants to increase their knowledge and motivate them to sleep under LLIN</p> <p><b>Key messages:</b> sleeping under LLIN every night prevents you from malaria</p> <p><b>Target audience:</b> cross-border migrants</p> <p><b>Number of production:</b> 10,000 sheets (produced in Cambodia and shared with CAP-Malaria/Thailand)</p> <p><b>Distribution :</b> HPHs ad MPs, targeted villages, and cross-border sites in target areas along Thailand-Cambodia border</p>

<p>4</p>		<p><b>Type of BCC material:</b> bilingual poster</p> <p><b>Objective :</b> distribute to cross-border migrants to increase their knowledge and motivate them to sleep under LLIN</p> <p><b>Key messages:</b> sleeping under LLIN every night at the farm or the forest prevents you from malaria</p> <p><b>Target audience:</b> cross-border migrants</p> <p><b>Number of production:</b> 10,000 sheets (produced in Cambodia and shared with CAP-Malaria/Thailand)</p> <p><b>Where distributed :</b> HPHs ad MPs, targeted villages, and cross-border sites in target areas along Thailand-Cambodia border</p>
<p>5</p>		<p><b>Type of BCC material:</b> bilingual poster</p> <p><b>Objective :</b> distribute to cross-border migrants to increase their knowledge and motivate them to seek malaria treatment on time</p> <p><b>Key messages:</b> if you have headache, high fever, do blood test immediately</p> <p><b>Target audience:</b> cross-border migrants</p> <p><b>Number of production:</b> 10,000 sheets (produced in Cambodia and shared with CAP-Malaria/Thailand)</p> <p><b>Where distributed :</b> HPHs ad MPs, targeted villages, and cross-border sites in target areas along Thailand-Cambodia border</p>
<p>6</p>		<p><b>Type of BCC material:</b> bilingual poster</p> <p><b>Objective :</b> distribute to cross-border migrants to increase their knowledge and motivate them to follow prescription and appointment with HF staff</p> <p><b>Key messages:</b> following prescription, re-checking your blood according to health staff appointment prevent you from malaria drug resistance</p> <p><b>Target audience:</b> cross-border migrants</p> <p><b>Number of production:</b> 10,000 sheets</p> <p><b>Where distributed :</b> target areas along Thailand-Cambodia border</p>
<p>7</p>		<p><b>Type of BCC material:</b> poster</p> <p><b>Objective :</b> distribute to cross-border migrants to increase their knowledge and accept IRS</p> <p><b>Key messages:</b> doing indoor spray to get mosquitos away</p> <p><b>Target audience:</b> cross-border migrants and Thai residents</p> <p><b>Number of production:</b> 10,000 sheets</p> <p><b>Where distributed :</b> target areas along Thailand-Cambodia border</p>

8		<p><b>Type of BCC material:</b> bilingual billboard</p> <p><b>Objective :</b> display to let the cross-border migrants know the service delivery points in both sites are</p> <p><b>Key messages:</b> name of HF in both sites, focal people, phone numbers and distance from border to each HF</p> <p><b>Target audience:</b> cross-border migrants</p> <p><b>Number of production:</b> 5 units</p> <p><b>Where distributed :</b> target areas along Thailand-Cambodia border</p>
9		<p><b>Type of BCC material:</b> poster</p> <p><b>Objective :</b> encourage cross-border migrant to seek malaria treatment at HF</p> <p><b>Key messages:</b> health staff show the procedure and encourage migrant workers to seek malaria treatment</p> <p><b>Target audience:</b> cross-border migrants</p> <p><b>Number of production:</b> ????</p> <p><b>Where distributed :</b> installed at border entrance</p>
E		<p><b>Type of BCC material:</b> poster</p> <p><b>Objective :</b> distribute to cross-border migrants to increase their knowledge on side effect of PQ</p> <p><b>Key messages:</b> the side effect which might happen during taking PQ drug</p> <p><b>Target audience:</b> cross-border migrants</p> <p><b>Number of production:</b> ???</p> <p><b>Where distributed :</b> target areas along Thailand-Cambodia border</p>

#### 5.4 Annex 4 – Success story

Success Stories/Lessons Learned Template
One Story Per Template

**Instructions:** Provide the information requested below. *Don't forget pictures.*

\* **Program Element:** Health

\* **Key Issues:** Malaria

**Title:** Use of LINE mobile application to improve coordination in malaria control among government and NGO partners: preliminary results from Chanthaburi province.

**Operating Unit:** PMI/USAID CAP-Malaria, Thailand

**Please provide the following data:**

**\*Headline (Maximum 300 characters):** A good headline or title is simple, jargon free, and has impact; it summarizes the story in a nutshell; include action verbs that bring the story to life.

Use of LINE mobile application to improve coordination in malaria control among government and NGO partners: preliminary results from Chanthaburi province.

**\*Body Copy (maximum 5,000 characters):** The first paragraphs should showcase the challenge encountered and the context of the foreign assistance program. Presenting a conflict or sharing a first person account are two good ways to grab the reader's attention. Continue by describing what actions were taken and finally describing the end result. What changed for the person or community? What was learned? How did this make a difference in the community or to the country overall? If this story is relating to a "best practice", what were the innovations in planning, implementation or partnering that made it different? If this story is about an evaluation, what program adjustments were made?

Early diagnosis and appropriate treatment (EDAT) of malaria cases is critical to ensure positive patient outcomes and can limit malaria transmission in an area. While the former emphasizes quality clinical service component, the latter emphasizes on surveillance and responses.

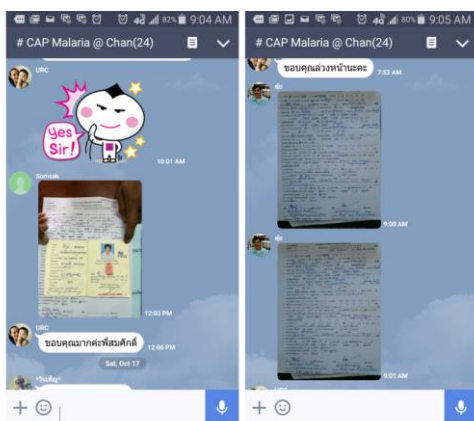
CAP-Malaria supported the Chanthaburi Provincial Health Office (PHO) to introduce quality malaria EDAT service into the primary health care at Health Promotion Hospitals in Soidao and Pongnamron districts. In 2015, there are 25 and 22 service delivery points that provide malaria early diagnostics and treatment services in Soidao and Pongnamron, respectively.

The challenge in malaria control is the linkages between EDAT services at these service delivery points with the surveillance and response activities under the malaria control program in a timely manner. Monthly reporting of malaria cases by health facilities into the Malaria Information System (MIS) can make it difficult for the sub-district malaria response team (Vector Borne Diseases Unit) to conduct case investigation and implement vector control activities that reflect the dynamic of disease transmission in these malaria hot-spots. In addition NGO partners have key roles in malaria control efforts, particularly in non-Thai migrant communities by providing health education to individual, mobilizing community to raise awareness, and distributing long-lasting insecticide treated nets (LLINs). However, there is no formal mechanism to include NGO partners in the MIS systems.

According to the Ministry of Information and Communication Technology, there are

approximate 33 million registered users of LINE, a mobile messaging application, in Thailand (population 67 million). CAP-Malaria learned that local health staffs sometime used such informal communication channel to informally share work-related information. CAP-Malaria set up a “formal” LINE group for malaria control partners to quickly notify when cases are diagnosed in Soidao and Pongnamron districts to improve timely malaria control responses. The group include key staff from each of the malaria service delivery points, VBDU staff, PHO and DHO staffs, along with CAP-Malaria staff and other NGO partner. Though recently introduced in June 2015, CAP-Malaria staff has noticed changes its uptake. The initial feedbacks has been very positive. Field staffs prefers the use of LINE over telephone calls because it is free and fast. Patients can consent to have their pictures taken which can be shared along with a snapshot of the patient registration page in a few seconds.

Such as the case of Mr. Channak Roeun, a 25 year old migrant worker who was diagnosed with *P. falciparum* malaria at Malaria Clinic. His case was immediate shared via LINE application (Figure 5) to local malaria partners on the day of diagnosis, including CAP-Malaria staff. The next business day following case notification by LINE, CAP-Malaria staff and volunteers visited Mr. Channak Roeun and his employer at their temporary residence and workplace based on the shared information. Channak were interviewed by CAP-Malaria about his knowledge and bednet use. CAP-Malaria team also conducted LLIN assessment and top-up of all migrant households at the worksite. CAP-Malaria will continue to monitor the use of LINE as communication tools and results among partners. CAP-Malaria will continue to monitor the use of free messaging mobile application as an informal communication tools to share malaria information and coordination in order to improve local malaria responses.



**Figure 6:** (Left) Screenshot of LINE messages shared by Mr. Somsak, VBDU staff, with Identification of Mr. Channak Roeun diagnosed on the same day with *falciparum* infection. (Right) Screenshot of case investigation form with current address for follow-up. Photo: Somsak, b VBDU, Chanthaburi, Thailand.



**Figure 7:** Palichat Yosarlai, CAP-Malaria/Field and volunteer visited Mr. Channak Roeun and conducted case interview, provided health education to nearby residents and migrants, assess LLIN gaps and top-up as needed. Activities can be shared immediately on LINE application. Photo: Palichat Yosarlai, Thailand.

*“LINE has made my job coordinating between with health staff and VBDU staff much easier. Previously, I would have to call individual clinics to ask about malaria cases. But now I just send one message to all relevant people. They (VBDU staff or health staff) can use LINE to share pictures of registration form and patient. This makes it really easy for us*

*(CAP-Malaria) and volunteers to target the community for outreach activities.” – Ms. Palichat Yosarlai, Field Coordinator/Chanthaburi, CAP-Malaria.*

*“Before I would have to make a few phone calls to notify all the partners like CAP-Malaria and coordinate (malaria control) activities. This is out-of-pocket money. I prefer to use LINE because it is free and it is fast. It takes a few seconds to share a picture of registration form with all the information needed to everyone involved.” – Mr. Paitoon Muksikaratt, Chief, VBDU 6.5.4, Chanthaburi, Thailand*

*“MIS is good for analyzing trend and situation, but not so practically for malaria surveillance and responses because the case is only alerted to us when field or health facility staff log-in and enter the information (into the MIS system). Since LINE was used to share malaria information in Soidao and Pongnamron districts, I can know immediate about the case, case information, and response activities while I’m sitting in another district. I can give my (technical) inputs to the VBDU staff on the appropriate responses for the individual malaria case.” – Mr. Paiboon Somjinda, Chief, Vector Borne Diseases Center 6.5, Chanthaburi.*

**\*Pullout Quote (Optional, 1,000 characters):** Please provide a quote that represents and summarizes the story.

*“They (VBDU staff or health staff) can use LINE to share pictures of registration form and patient to share pictures of registration form and patient. This makes it really easy for us (CAP-Malaria) and volunteers to target the community for outreach activities.” – Ms. Palichat Yosarlai, Field Coordinator/CAP-Malaria, Chanthaburi, Thailand.*

*“I prefer to use LINE because it is free and it is fast. It takes a few seconds to share a picture of registration form with all the information needed to everyone involved.” – Mr. Paitoon Muksikaratt, Chief, VBDU 6.5.4, Chanthaburi, Thailand*

*“...I can know immediate about the case, case information, and response activities while I’m sitting in another district. I can give my (technical) inputs to the VBDU staff on the appropriate responses for the individual malaria case.” – Mr. Paiboon Somjinda, Chief, Vector Borne Diseases Center 6.5, Chanthaburi.*

**\*Background Information (3,000 characters):** Please provide whether this story is about a presidential initiative, Key Issue(s), where it occurred (city or region of country) and under what item(s) (Objectives, Program Areas, Program Elements) in the foreign assistance Standardized Program Structure. Include as many as appropriate.

The PMI|USAID Control and Prevention of Malaria (CAP-Malaria) project funded by PMI operating malaria intervention in 3 countries including Cambodia, Thailand and Burma. The project aims to contain the spread of multi-drug resistant *P. falciparum* malaria in the Greater Mekong Sub-region. The objectives of the project are:

- 1) Scale-up cost-effective vector control interventions to prevent malaria transmission;
- 2) Improve the quality and effectiveness of diagnosis and treatment of malaria at the community and health facility levels;
- 3) Reduce bottlenecks to implement and monitor malaria control activities; and
- 4) Support the establishment and maintenance of strategic information for malaria control.

In Thailand, CAP-M is supporting local authorities to expand interventions implemented in Ranong and Chanthaburi. The project supports community-level diagnosis and treatment, comprehensive malaria services for high-risk mobile and migrant populations including LLIN distribution, and strengthening coordination among local stakeholders to improve the accessibility and availability of malaria services among target groups.

**\*Contact Information (300 characters):** Please list the name of the person submitting along with their contact information (email and phone number).

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E-mail: paiboon555@hotmail.co.th, Tel: +66 89 099 0673

Ms. Palichat Yosarlai, PMI/USAID CAP-Malaria, Field Coordinator / Chanthaburi  
E-mail: [palichaty@urc-chs.com](mailto:palichaty@urc-chs.com), Tel: +66 80 834 4928

## 5.5 Annex 5 – Malaria control activities in CAP-Malaria target areas by implementing partners, (Year 4 and 5)

**Table 12: List of malaria implementing partners and activities in CAP-Malaria project areas in Year 4 and 5**

Activity	Partners	Approach	Remarks:
HE by IPC only (other HE activities are not included)	PHO/DHOs	IPC through MPs (SSF, RAI) and HPHs (RAI, CAP-Malaria).	
	VBDC/VBDU	IPC through Malaria Clinic	
	ARC (Ranong) IOM (Sakaeo, Chanthaburi)	IPC through HH and farm visits (SSF) IPC through hired migrant staff sitting at BMPs (RAI in Ranong)	Include HE to <i>Pf</i> patients
	CAP-Malaria/URC	IPC through migrant volunteers during HH and farm visits IPC by staff and volunteers during reactive-outreach responses. Visit index case village to provide HE to family members and neighbors	Also interview malaria patients about behavior, LLIN ownership and use, and travel history. In Ranong higher malaria cases, priority is given to migrant <i>Pf</i> patients.
LLIN distribution	PHO/DHOs	To Thai residents (SSF, RAI) To suspected malaria patients and pregnant women at HPHs (CAP-Malaria's LLINs)	HH distribution are done annually
	VBDC/VBDU	LLIN distribution to malaria patients at Malaria Clinic	LLINs from GFs and from PMI/USAID. No source document for LLIN distributed to patients. Patient's registration (EP1) can provide patient headcount.

Activity	Partners	Approach	Remarks:
	ARC (Ranong) IOM (Sakaeo, Chanthaburi)	To migrants through farm and HH visits  Ranong Year 4: Total 1,438 LLINs (1,038 in Kraburi, 400 in La-un) (SSF)  Chanthaburi Year 4: Total LLINs (687 in Pongnamron, 1,069 in Soidao) (SSF)  Sakaeo in Year 4: Total 100 LLINs (40 in Klonghat, 60 in Wattana-nakorn) (SSF)  Year 5: No activity plan for SSF and RAI	HH or farm distribution are done annually
	CAP-Malaria/URC	LLIN distributed to migrants through farm and HH visits in 16 fixed villages (4 villages each in Kraburi, La-un, Pongnamron, Soidao).  In Year 4, only 3 villages in Kraburi overlap with CAP-Malaria on paper. However, only 57 LLIN were distributed by ARC in 1 village (Moo 9, Ban Nai Krang).	Annual distribution to migrants during HH and farm visits. Quarterly top-up as needed based on LLIN monitoring information.  CAP-Malaria agreed to let ARC and IOM complete their LLIN distribution in the target districts first, then request summary data before CAP-Malaria/URC start activity.
LLIN monitoring of coverage and use	CAP-Malaria/URC	LLIN monitoring to migrants through farm and HH visits in 16 fixed villages using LQAS method (20 HHs / district / quarter).	Top-up as needed based on LLIN monitoring results
EDAT service	PHO/DHOs	Through MPs (SSF, RAI) and HPHs.  Kraburi, Ranong: 11 HPHs in Kraburi (5 with RAI, 6 with CAP-Malaria); 10 MPs (5 with SSF, 5 with RAI), 3 BMPs (SSF),  La-un, Ranong: 8 HPHs in La-un (5 with RAI, 3 with CAP-Malaria); 2 MPs (RAI)  Pongnamron, Chanthaburi: 6 HPHs (CAP-Malaria); 13 MPs and 3 BMPs (SSF)  Soidao, Chanthaburi: 13 HPHs (CAP-Malaria); 11 MPs and 1 BMPs (SSF)  Sakaeo: Total 9 HPHs (5 with CAP-Malaria, 4 are under no malaria risk), no MPs	Activities by HPH initiated under CAP-Malaria in Year 3 and Year 4, providing technical support and assistance for training and monitoring of HPHs. In January 2015, 5 HPH in La-un was transferred to GF-RAI for support.  CAP-Malaria supported 50% incentives to 4 MPs in La-un in Year 4. These are transferred to DHO in Year 5.
Partner's meeting / strategic information	PHO/DHO ARC (Ranong) IOM (Sakaeo, Chanthaburi) VBDC (participation only)	Quarterly proposed. Each partners would take turn supporting the meeting.	When CAP-Malaria/URC support the meeting, we request PHO to chair them meting and send invitations to ensure local commitment and buy-in.
Twin-cities	PHO/DHO Participation only: VBDC, ARC (Ranong), IOM (Chanthaburi, Sakaeo)	Quarterly. Each twin-cities counterpart take turn to organize the meeting with assistance from CAP-Malaria/URC offices.  In Ranong, additional funds for twin-cities meetings come from Ranong PHO, TICA, GF/TB/Burma, and most recently GF-RAI/ARC/Burma during last meeting in September 2015.  In Chanthaburi, addition funds committed from PHO office for meeting in Chanthaburi.	We request PHO to chair them meting and send invitations to ensure local commitment and buy-in.

**5.6 Annex 6 – Summary of all performance indicators relating to case management (by districts) among Thai and non-Thai migrants reported FY2014<sup>a,b,c</sup> compared to FY2015<sup>a,b,c</sup>**

Kraburi, Ranong <sup>a</sup>	2015				2014			
	Thai	M1	M2	Total	Thai	M1	M2	Total
Number of malaria tests	9,661	10,855	1,806	22,322	17,262	18,915	3,626	39,803
Number of positive	72	99	93	264	185	159	267	611
<i>Pf</i> cases	12	20	17	49				
Non- <i>Pf</i> cases	58	78	76	212				
<i>Pm</i>	2	0	0	2				
<i>P</i> -mixed	0	1	0	2				
<i>Pf</i> +gam	0	0	0	0	0	0	0	0
% <i>Pf</i>	16.7	20.2	28.3	18.6	14.59	21.38	18.35	18.00
% <i>Pf</i> gam	0.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
อัตราภาพพบเชื้อ (SPR)	0.7	0.9	5.1	1.2	1.07	0.84	7.36	1.54
% CI completed	98.6	100.0	0.0	64.4				
% DOT completed ( <i>Pf</i> )	54.5	95.0	0.0	52.1				
% FU Day 7 completed ( <i>Pf</i> )	54.5	95.0	0.0	52.1				
% FU Day 28 completed ( <i>Pf</i> )	54.5	95.0	0.0	52.1				
La-un, Ranong <sup>a</sup>	2015				2014			
	Thai	M1	M2	Total	Thai	M1	M2	Total
Number of malaria tests	2,446	2,731	19	5,196	3,627	5,993	184	9,804
Number of positive	7	19	6	32	71	109	18	198
<i>Pf</i> cases	4	12	2	18				
Non- <i>Pf</i> cases	3	7	4	14				
% <i>Pf</i>	57.1	63.2	33.3	56.3	38	39	22	37
% <i>Pf</i> gam	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
อัตราภาพพบเชื้อ (SPR)	0.3	0.7	31.6	0.6	1.96	1.82	9.78	2.02
% CI completed	85.7	100.0	0.0	78.1				
% DOT completed ( <i>Pf</i> )	33.3	33.3	0	29.4				
% FU Day 7 completed ( <i>Pf</i> )	33.3	75.0	0	58.8				
% FU Day 28 completed ( <i>Pf</i> )	33.3	75.0	0	58.8				
Pongnamron, Chanthaburi <sup>b</sup>	2015				2014			
	Thai	M1	M2	Total	Thai	M1	M2	Total
Number of malaria tests	6,577	31	7,484	14,092	12,119	44	11,442	23,605
Number of positive	12	0	32	44	21	0	19	40
<i>Pf</i> cases	2	0	8	10	0	0	2	2
Non- <i>Pf</i> cases	10	0	22	32	20	0	15	35
<i>P</i> -mixed	0	0	2	2	1	0	2	3
<i>Pf</i> +gam	0	0	4	4	0	0	0	0

%Pf	16.7	0	25.0	22.7	0.0	0.0	10.5	5.0
%Pf gam	0	0	50.0	40.0	0.0	0.0	0.0	0.0
อัตราการพบเชื้อ (SPR)	0.18	0	0.43	0.31	0.17	0	0.17	0.17
% CI completed	50.0	0	78.1	70.5	76.2	0	52.6	65.0
% DOT completed (Pf)	0	0	100.0	40.0	0	0	100.0	100.0
% FU Day 7 completed (Pf)	0	0	100.0	40.0	0	0	100.0	100.0
% FU Day 28 completed (Pf)	0	0	50.0	20.0	0	0	50.0	50.0
<b>Soidao, Chanthaburi <sup>b</sup></b>	<b>2015</b>				<b>2014</b>			
	<b>Thai</b>	<b>M1</b>	<b>M2</b>	<b>Total</b>	<b>Thai</b>	<b>M1</b>	<b>M2</b>	<b>Total</b>
Number of malaria tests	5,836	0	9,292	15,128	7,439	0	17,882	25,321
Number of positive	3	0	14	17	7	0	10	17
Pf cases	1	0	5	6	0	0	3	3
Non-Pf cases	2	0	9	11	7	0	7	14
Pf+gam	0	0	2	2	0	0	0	00
%Pf	33.3	0	35.7	35.3	0	0	30.0	17.6
%Pf gam	0.00	0	40.0	33.3	0	0	33.3	33.3
อัตราการพบเชื้อ (SPR)	0	0	0.15	0.11	0.09	0.00	0.06	0.07
% CI completed	66.7	0	100.0	94.1	57.1	0	70.0	64.7
% DOT completed (Pf)	0	0	100	80.0	0	0	100	100
% FU Day 7 completed (Pf)	0	0	100	80.0	0	0	100	100
% FU Day 28 completed (Pf)	0	0	50	40.0	0	0	0	0
<b>Klonghat, Sakaeo <sup>c</sup></b>	<b>2015</b>				<b>2014</b>			
	<b>Thai</b>	<b>M1</b>	<b>M2</b>	<b>Total</b>	<b>Thai</b>	<b>M1</b>	<b>M2</b>	<b>Total</b>
Number of malaria tests	1,398	0	2,113	3,511	1,387	0	2,733	4,120
Number of positive	0	0	2	2	4	0	2	6
Pf cases	0	0	2	2	1	0	1	2
Non-Pf cases	0	0	0	0	3	0	1	4
%Pf	0	0	100	100	25.0	0	50.0	75.0
%Pf gam	0	0	0	0	0	0	0	0
อัตราการพบเชื้อ (SPR)	0.00	0.00	0.09	0.09	0.28	0.00	0.07	0.35
% CI completed	-	-	100	100	100	0	100	100
% DOT completed (Pf)	-	-	100	100	100	0	100	100
% FU Day 7 completed (Pf)	-	-	100	100	100	0	100	100
% FU Day 28 completed (Pf)	-	-	100	100	100	0	100	100

<sup>a</sup> Obtained from from VBDC 11.5 in October 2015

<sup>b</sup> Obtained from from VBDC 6.5 on October 7-8, 2015

<sup>c</sup> Obtained from from VBDC 6.2 in October 2015.